Securities ID code:6859

ESPEC CORP.

Results Briefings for Fiscal 2019 Ended March 2020

May 26, 2020

Table of Contents

Company Profile

Industry-leading manufacturer of environmental test chambers

Name	ESPEC CORP.
Head Office	3-5-6, Tenjinbashi, Kita-ku, Osaka
Represented By	Masaaki Ishida
Established	July 25, 1947
Incorporated	January 13, 1954
Paid-up Capital	¥6,895 Million
Shares Issued	23,781,394 Shares
Employees	1,512 (consolidated)
Main Business	Manufacture and Sales of Environmental Test Chambers, Energy Device Equipment, Semiconductor Equipment and Plant Factory. After-sales Service, Commissioned Tests and others.

Head office

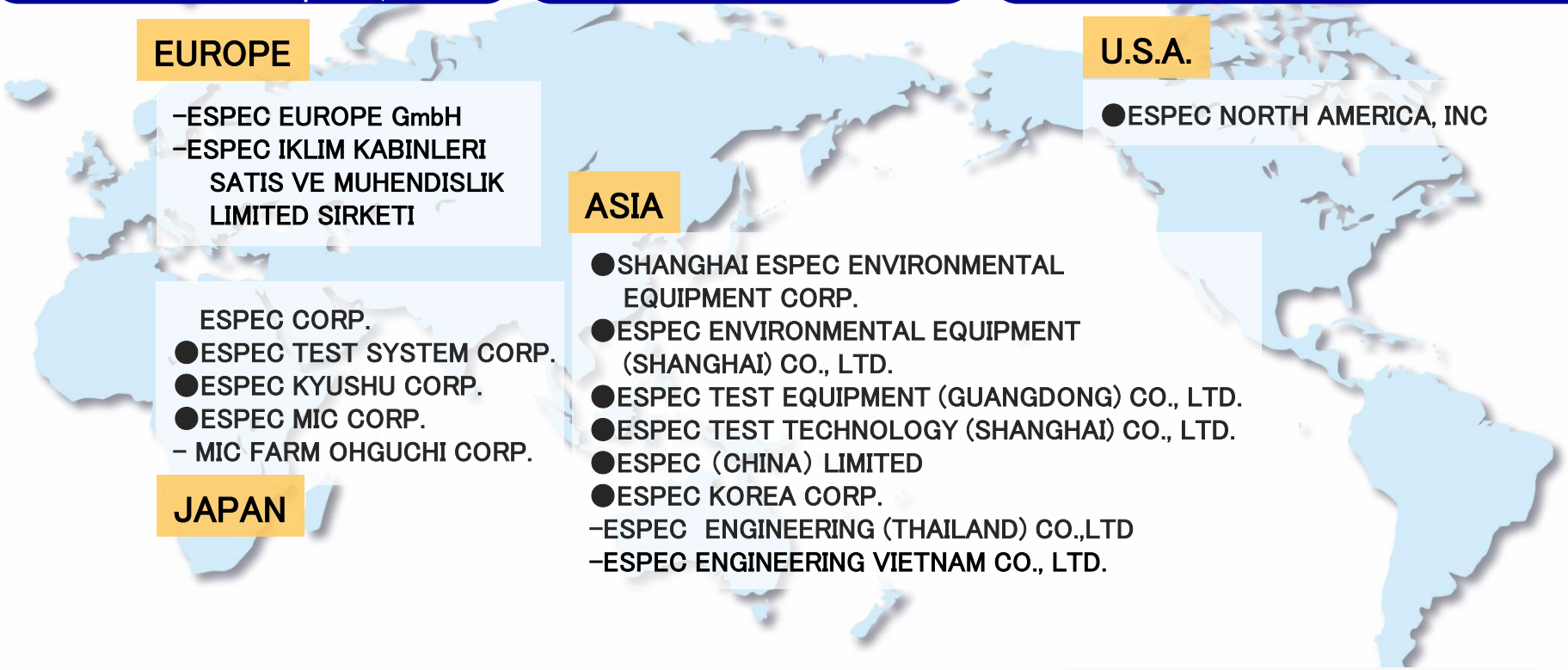
Share of Environmental Test Chambers: Over 30% worldwide, Over 60% domestic (As of March 31, 2020)

Global Network

Consolidated Subsidiaries
10 companies
(Global 7 companies,
Domestic 3 companies)

Global Network
46 countries
42 companies

Business Facilities in Japan : 25
Domestic Agencies in Japan : 46



EUROPE

-ESPEC EUROPE GmbH
-ESPEC IKLIM KABINLERI SATIS VE MUHENDISLIK LIMITED SIRKETI

U.S.A.

●ESPEC NORTH AMERICA, INC

ASIA

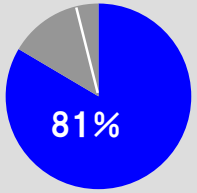
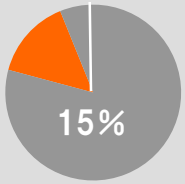
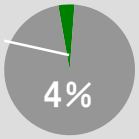
●SHANGHAI ESPEC ENVIRONMENTAL EQUIPMENT CORP.
●ESPEC ENVIRONMENTAL EQUIPMENT (SHANGHAI) CO., LTD.
●ESPEC TEST EQUIPMENT (GUANGDONG) CO., LTD.
●ESPEC TEST TECHNOLOGY (SHANGHAI) CO., LTD.
●ESPEC (CHINA) LIMITED
●ESPEC KOREA CORP.
-ESPEC ENGINEERING (THAILAND) CO.,LTD
-ESPEC ENGINEERING VIETNAM CO., LTD.

JAPAN

ESPEC CORP.
●ESPEC TEST SYSTEM CORP.
●ESPEC KYUSHU CORP.
●ESPEC MIC CORP.
- MIC FARM OHGUCHI CORP.

●: Consolidated Subsidiaries
-: Non-consolidated Subsidiaries

Summary of ESPEC Business (Per Market / Use)

		Main Products	Market	Use	Sales composition (FY2019)
Equipment Business	Environmental Test Chambers	•Temperature & humidity chamber •Thermal shock chamber •Bench-top type temperature & humidity chamber •HAST chamber •Walk-in type temperature & humidity chamber •Combined temperature & humidity chamber •HALT & HASS test chamber •FPD equipment	•Electronic component and equipment market •Automobile market •Semiconductor market •Medicine, Cosmetics, Foods market •LCD and Organic Electro-Luminescence market	•For R & D •For credibility and evaluation •For production and inspection	
	Energy Device Equipment	•Charge-discharge Cycle Evaluation Equipment •LIB safety evaluation system •Fuel cells evaluation system	•Next generation automobile market •Secondary batteries market •Fuel cells market	•For R & D •For credibility and evaluation •Safety evaluation •For production	
	Semiconductor Equipment	•Burn-in system •Semiconductor evaluation system •Instrumentation system	•Semiconductor market •Automobile market	•For production and inspection •For development and evaluation	
Service Business	After-sales Service and Engineering	•After-sales service •Construction around equipment	•Electronic component and equipment market •Automobile market •Semiconductor market	—	
	Commissioned Tests and Facility Rentals	•Commissioned test •Resale • Equipment rental •Calibration		•For R & D •For credibility and evaluation	
Other Business	Environmental Preservation	Reforestation (Tree planting), Waterfront biotope restoration, Urban greening			
	Plant Production Systems	Plant factory, Equipment for growing plants			

Response to COVID-19

Response to COVID-19

- In response to the spread of the novel coronavirus (COVID-19) in China, we have been working since late January to take measures to prevent the spread of infection and to maintain business continuity.

- We will continue rigorously implementing measures to prevent infection following the policy and requests of the national and local governments, while making every effort to maintain business continuity to ensure that no obstacles arise for our customers' businesses.

<Reference>Status of ESPEC CORP. and subsidiaries (Japan)

As of May 26, 2020

<Statue of ESPEC CORP.>

Company name	Facilities	Status
ESPEC CORP.	The Fukuchiyama Plant (Kyoto)	Continuing manufacturing while implementing infection prevention countermeasures
	Sales and service facilities	Continuing operation by way of telecommuting and staggered work hours
	Laboratory testing service facilities	Continuing operations while implementing infection prevention countermeasures

<Statue of subsidiaries (Japan) >

Company name	Business details	Status
ESPEC TEST SYSTEM CORP.	Development, manufacturing, and sales of environmental testing equipment	Continuing business operations through the use of measures such as telecommuting to prevent our customer's businesses from being affected
ESPEC MIC CORP.	Plant factory business, restoration of natural environment, development/manufacturing/sales of environmental testing devices	
ESPEC KYUSHU CORP.	Sales of physicochemical devices, analytical devices, and semiconductor-related devices	

<Reference>Status of subsidiaries (Overseas)

As of May 26, 2020

Company name	Business details	Status
SHANGHAI ESPEC ENVIRONMENTAL EQUIPMENT CORP.	Design and manufacturing of environmental testing equipment	Business as usual as of the end of March
ESPEC TEST EQUIPMENT (GUANGDONG) CO., LTD.	Manufacturing and sales of environmental testing equipment	Business as usual as of the end of March
ESPEC ENVIRONMENTAL EQUIPMENT (SHANGHAI) CO., LTD.	Sales and after service of environmental testing equipment	Continuing operations (including telecommuting) at all sales offices (Beijing, Tianjin, Shanghai, Suzhou, Guangzhou, Shenzhen, Xi'an, and Chengdu)
ESPEC TEST TECHNOLOGY (SHANGHAI) CO., LTD.	Commissioned testing services for environmental testing	Business as usual at all test facilities (Shanghai and Suzhou)
ESPEC NORTH AMERICA	Development, manufacturing, sales, and service of environmental testing equipment, HALT/HASS testing chambers	Business as usual as of the middle of May in plants (in Michigan and Colorado) Continuing office operations by way of telecommuting
ESPEC EUROPE GmbH	Sales and service of environmental testing equipment	Continuing business as usual (including telecommuting)
ESPEC KOREA CORP.	Manufacturing and sales of environmental testing equipment	Business as usual
ESPEC ENGINEERING (THAILAND) CO., LTD.	Product sales, maintenance and inspection, after sales service Commissioned testing services	Continuing operations by way of telecommuting
ESPEC ENGINEERING VIETNAM CO., LTD.	Product maintenance and inspection, after sales service	Continuing operations by way of telecommuting

Impact of COVID-19 on Earnings

FY 2019

In China and other countries, some deliveries planned for March were delayed to the next fiscal year, but the impact on earnings was negligible. (We have achieved the revised plan targets for the most part)

FY 2020

The global spread of coronavirus disease 2019 (COVID-19) is expected to result in stagnation in consumer spending and corporate business activity.
Considering the difficulty in rationally determining its business forecasts, the targets for FY2020 are undecided, and the dividend is also undecided.
The forecasts of consolidated operating results will be announced promptly when it is possible to determine the forecasts.

Financial Result for the Fiscal 2019 Ended March 31, 2020

Unifying Fiscal Year-Ends and Postponing Adoption of IFRS

- To unify the fiscal year end, overseas consolidated subsidiaries recorded a 15-month period of financial results of FY2018. However, FY2019 was a 12-month period for both domestic and overseas consolidated subsidiaries

*Year on year changes in this presentation are comparisons against reference values based on a 12-month financial results recording period for overseas consolidated subsidiaries for FY2018.

FY 2019	January～March	April～June	July～September	October～December	January～March 2020
		Domestic Consolidated subsidiaries			
		Overseas consolidated subsidiaries			
FY 2018	January～March	April～June	July～September	October～December	January～March 2019
		Domestic Consolidated subsidiaries			
	Overseas consolidated subsidiaries				

- We have postponed the voluntary adoption of IFRS from FY2020

(disclosed on April 27, 2020)

Financial Highlights

In FY2019, orders-received for our mainstay environmental test chambers were weak due to a global economic slowdown. Profits and sales both decreased year on year, and we achieved the revised plan announced in October for the most part.

	Year on Year		Against the revised plan	
■Orders-Received	×	Decreased due to a decline in orders-received in the Equipment Business (primarily environmental test chambers) in Japan and overseas	○	Exceeded the plan as orders-received increased for semiconductor equipment and Other Business
■Net sales	×	Decreased due to a decline in orders-received in the Equipment Business (primarily environmental test chambers) in Japan and overseas	○	In line with the plan, as net sales increased for the Other Business, despite being lower than planned in the Equipment Business (primarily environmental test chambers) and the Service Business
■Operating income	×	Decreased due to lower net sales and deterioration in the cost of sales ratio	○	Exceeded the plan as operating income increased in the Equipment Business and Other Business
■Ordinary income, Net income*	×	Decreased due to the decrease in operating income	○	Exceeded the plan due to the increase in operating income

■Looking at dividends per share, as per the initial plan, the interim dividend was set at ¥22, while the year-end dividend is forecast at ¥46; accordingly, the annual dividend is forecast at ¥68 per share.

*Profit attributable to owners of parent

Summary of Profits and Losses

(millions of yen)

	FY 2018 Results	FY 2018 ※Reference	FY 2019 Revised plan	FY 2019 Results	Year on Year ※Reference ratio	Initial plan ratio
Orders-Received	50,698	48,008	43,000	43,571	-9.2%	1.3%
Net sales	50,580	47,060	42,500	42,443	-9.8%	-0.1%
Cost of Net Sales (Cost of sales ratio)	32,417 (64.1%)	29,975 (63.7%)	27,800 (65.4%)	27,724 (65.3%)	-7.5% (1.6pt deterioration)	-0.3% (0.1pt amelioration)
Gross profit	18,163	17,084	14,700	14,719	-13.8%	0.1%
SG & A	12,335	11,614	11,100	10,976	-5.5%	-1.1%
Operating income	5,827	5,470	3,600	3,742	-31.6%	3.9%
Ordinary income	5,851	5,493	3,700	3,933	-28.4%	6.3%
Profit attributable to owners of parent	4,289	4,030	2,700	2,818	-30.1%	4.4%

*Reference values for a regular year financial results period assuming a 12-month period for overseas consolidated subsidiaries

Review of the Fiscal 2019

External Environment

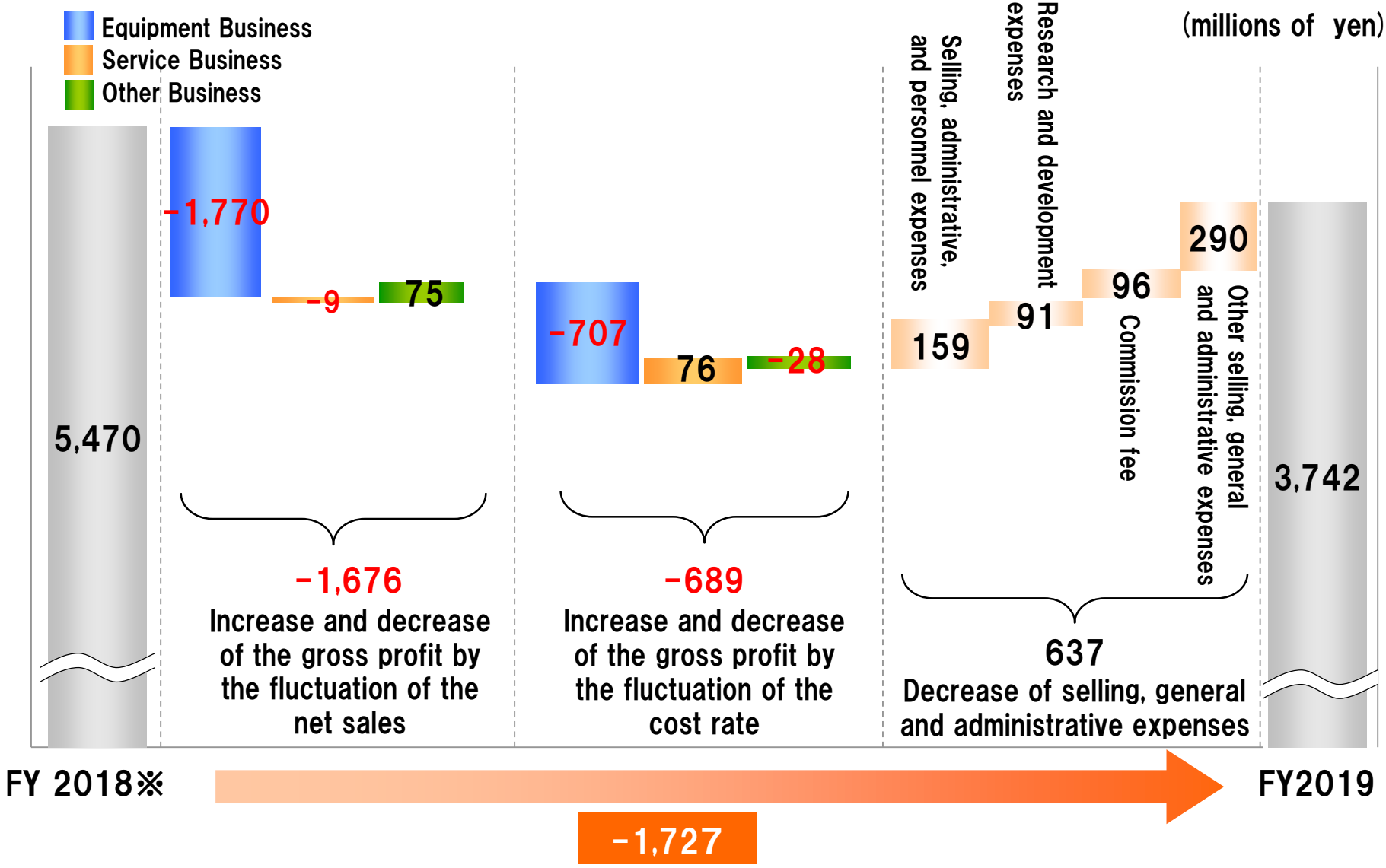
- The trend of suppressed investment continued from the start of the period due to a deterioration in the global business situation caused by the U.S.-China trade friction
- Moreover, the COVID-19 pandemic has caused further uncertainty in the global economy
- Semiconductor-related investment was strong, but investment in other sectors continue to be postponed or revised
- Foreign exchange (U.S. dollar/yen) is at $1 to ¥103~112. The rate is unstable, reaching the ¥101 level against the U.S. dollar at one point in March

Status of ESPEC

- Sales decreased due to weak orders-received year on year for environmental test chambers in Japan and overseas
- The cost of sales ratio deteriorated mainly for environmental test chambers
- The Chinese business was subdued year on year due to a decrease in large orders and other factors
  The impact of COVID-19 on earnings was negligible
- Investment in new products in the automotive and new fields (medical, materials), expanded commissioned testing services
- Constructed a new technology development building (inside Kobe R&D Center)

Revised the first half and full-year results forecasts downward in October 2019

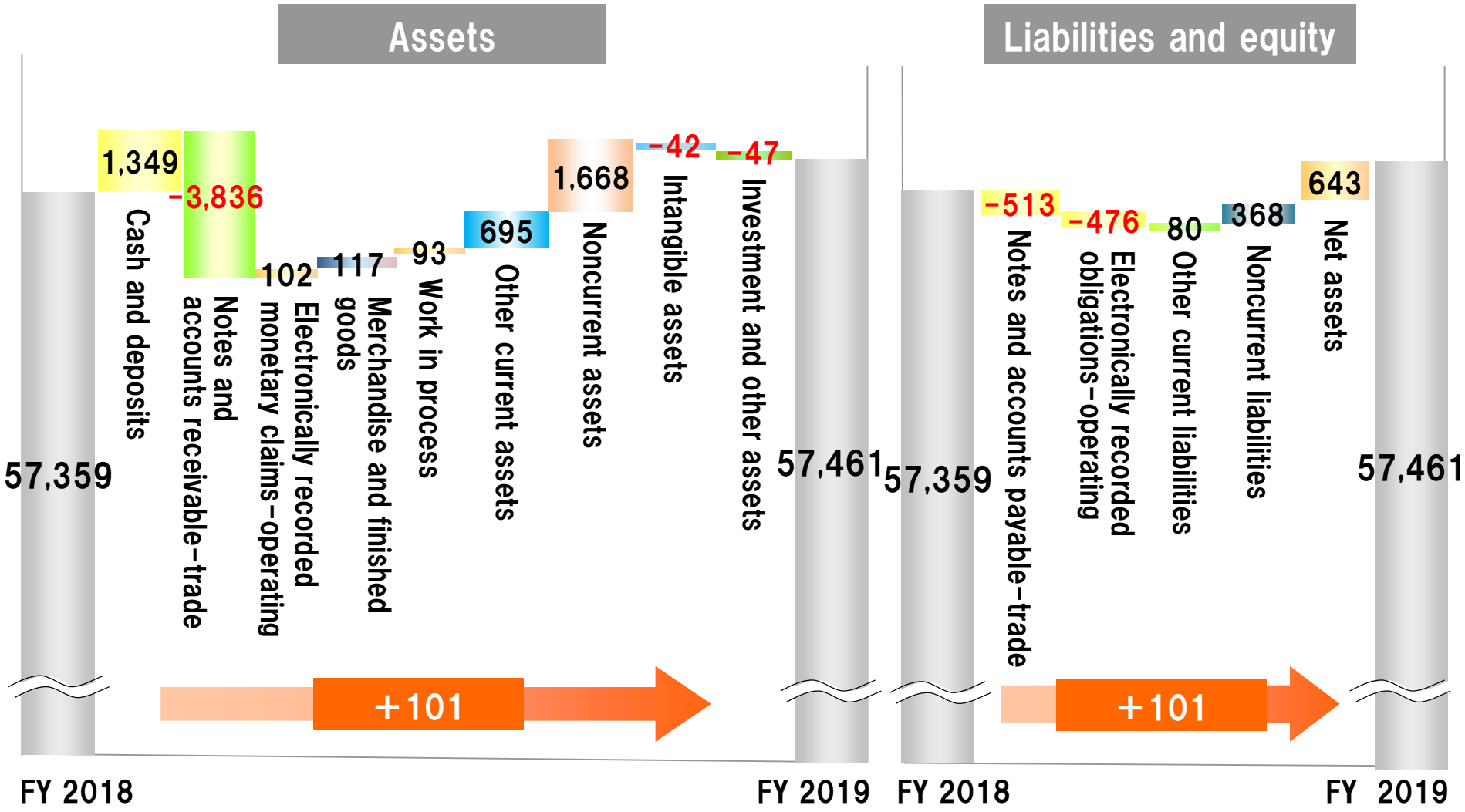
Analysis of Operating Income Increase and Decrease Factor



※Reference values for a regular year financial results period assuming a 12-month period for overseas consolidated subsidiaries

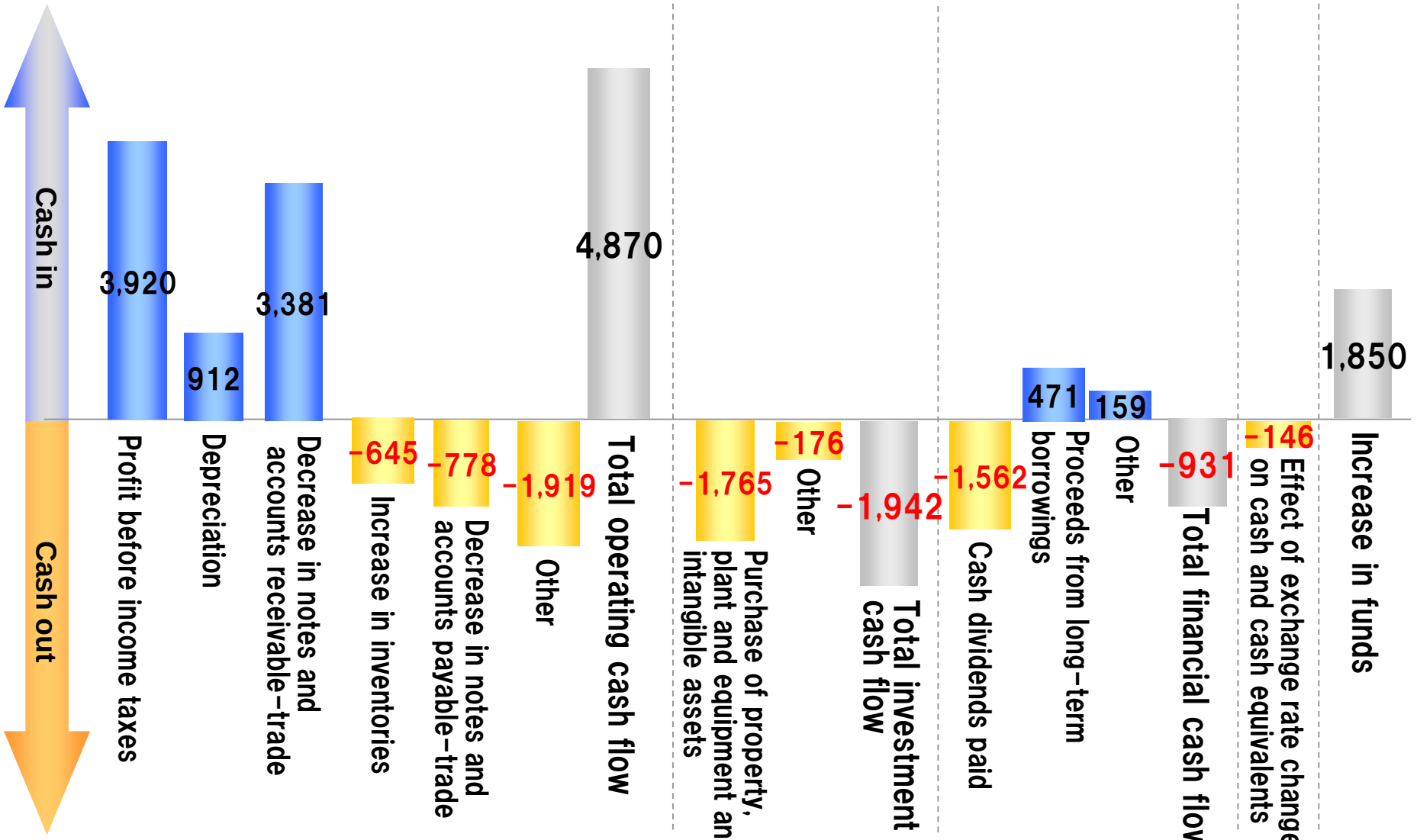
Statement of Assets and Liabilities

(millions of yen)



Statement of Cash Flow

(millions of yen)



Analysis per Segment for the Fiscal 2019 Ended March 31, 2020

Performance by Segment

(millions of yen)

Segment		FY 2018 Results	FY 2018 ※Reference	FY 2019 Revised plan	FY 2019 Results	Year on Year ※Reference ratio	Revised plan ratio
Equipment Business	Orders-Received	42,587	39,979	34,400	34,682	-13.3%	0.8%
	Net Sales	42,638	39,236	34,500	34,361	-12.4%	-0.4%
	Operating Income	5,193	4,908	2,900	3,041	-38.0%	4.9%
Service Business	Orders-Received	6,614	6,524	6,600	6,378	-2.2%	-3.4%
	Net Sales	6,613	6,486	6,600	6,459	-0.4%	-2.1%
	Operating Income	620	548	700	646	17.9%	-7.7%
Other Business	Orders-Received	1,706	1,706	2,200	2,715	59.1%	23.4%
	Net Sales	1,541	1,541	1,600	1,831	18.8%	14.4%
	Operating Income	9	9	0	49	428.7%	—
Elimination	Orders-Received	-210	-201	-200	-203	—	—
	Net Sales	-212	-203	-200	-208	—	—
	Operating Income	4	4	—	4	—	—
Total	Orders-Received	50,698	48,008	43,000	43,571	-9.2%	1.3%
	Net Sales	50,580	47,060	42,500	42,443	-9.8%	-0.1%
	Operating Income	5,827	5,470	3,600	3,742	-31.6%	3.9%

※Reference values for a regular year financial results period assuming a 12-month period for overseas consolidated subsidiaries

Equipment Business

Environmental Test Chambers

- In Japan, orders for versatile standardized products decreased in the second half of fiscal 2019, along with a decline in major projects for customized products.
- Overseas, orders decreased year on year across all areas, with a particularly weak performance trend in China, South Korea and Taiwan.

Energy Device Equipment

- Orders for evaluation systems for secondary batteries were lower than anticipated due to sluggish market conditions in China. Orders for evaluation systems for fuel cells also decreased as customers reviewed their investment plans.
- Net sales stayed at mostly the same level as in the previous fiscal year, mainly owing to evaluation systems for fuel cells.

Semiconductor Equipment

- Burn-in system and chambers for flash memory and automobiles performed solidly.

Equipment Business

(millions of yen)

	FY 2018 Result	FY 2018 ※Reference	FY 2019 Revised plan	FY 2019 Result	Year on Year ※Reference ratio	Revised plan ratio
Orders-Received	42, 587	39, 979	34, 400	34, 682	-13. 3%	0. 8%
Net Sales	42, 638	39, 236	34, 500	34, 361	-12. 4%	-0. 4%
Operating Income [Profit ratio (%)]	5, 193 [12. 2%]	4, 908 [12. 5%]	2, 900 [8. 4%]	3, 041 [8. 9%]	-38. 0%	4. 9%

*Reference values for a regular year financial results period assuming a 12-month period for overseas consolidated subsidiaries

Service Business

(millions of yen)

	FY 2018 Results	FY 2018 ※Reference	FY 2019 Revised plan	FY 2019 Results	Year on Year ※Reference ratio	Revised plan ratio
Orders-Received	6,614	6,524	6,600	6,378	-2.2%	-3.4%
Net Sales	6,613	6,486	6,600	6,459	-0.4%	-2.1%
Operating Income [Profit ratio (%)]	620 [9.4%]	548 [8.5%]	700 [10.6%]	646 [10.0%]	17.9%	-7.7%

*Reference values for a regular year financial results period assuming a 12-month period for overseas consolidated subsidiaries

After-sales Service and Engineering

- Orders-received and net sales were both mostly on par with the previous year, as after-sales service performed firmly.

Commissioned Tests and Facility Rentals

- Due to the sluggish demand for commissioned tests, Orders-received and net sales were both mostly on par with the previous year.

Other Business

(millions of yen)

	FY 2018 Results	FY 2018 Revised plan	FY 2019 Results	Year on Year	Revised plan ratio
Orders-Received	1, 706	2, 200	2, 715	59. 1%	23. 4%
Net Sales	1, 541	1, 600	1, 831	18. 8%	14. 4%
Operating Income [Profit ratio (%)]	9 [0. 6%]	0 [0. 0%]	49 [2. 7%]	428. 7%	–

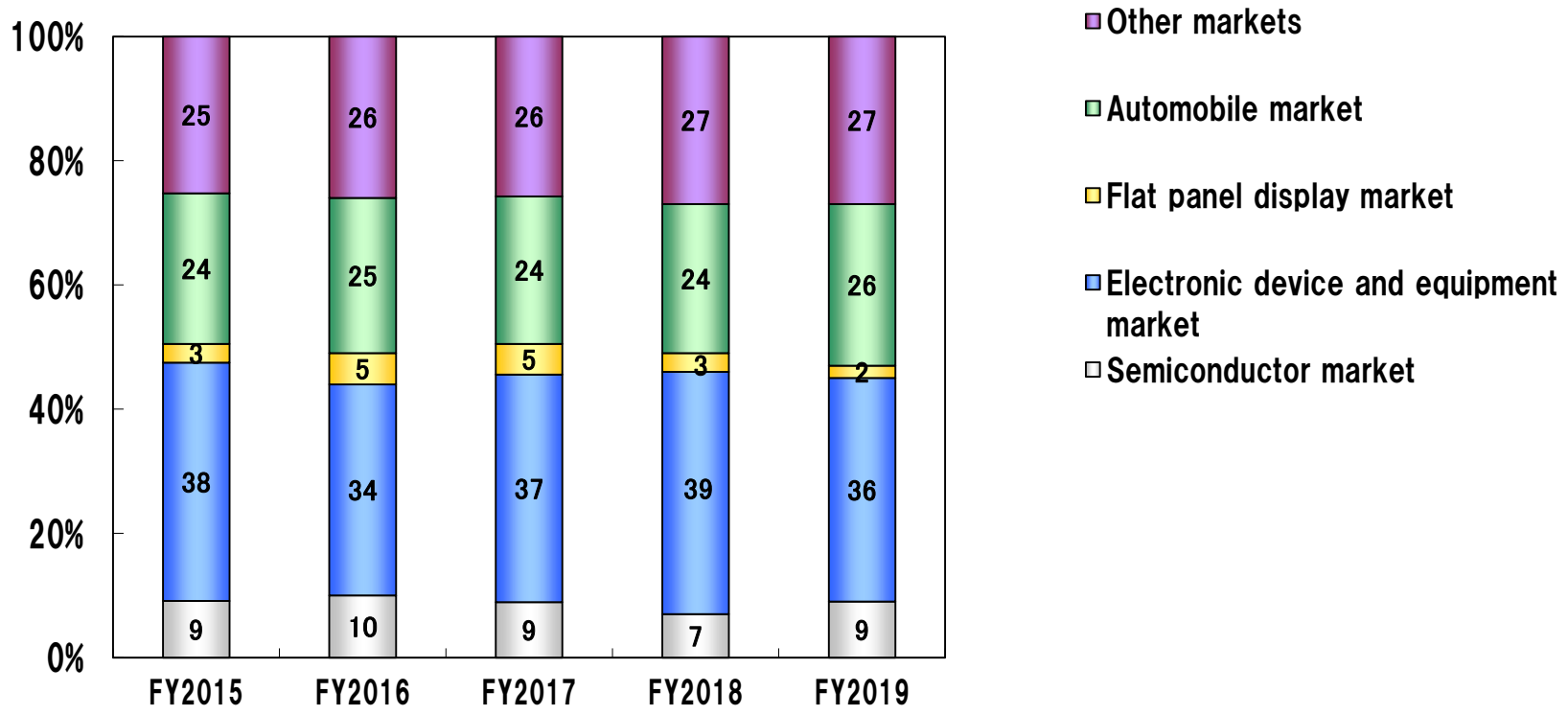
*The Other Business segment was not affected by the irregular fiscal period so a reference figure is omitted.

Environmental Preservation, Plant Production Systems

- The Company received a large order for a plant factory in the second quarter, and waterfront biotope restoration trended favorably.
  Both orders-received and net sales increased year on year.

Breakdown of Sales by Market

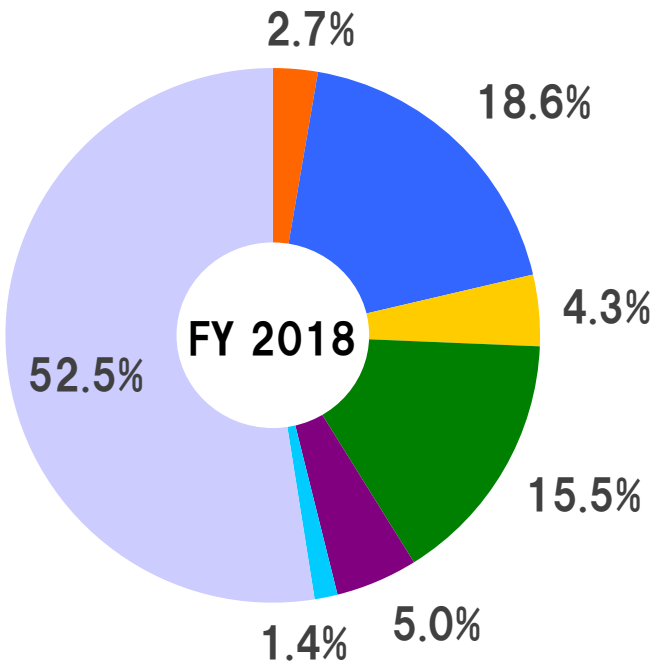
Non-consolidated (Equipment business)



Sales by Region

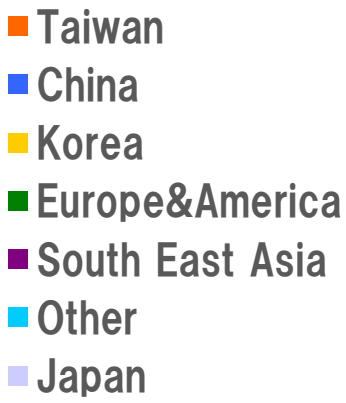
FY 2018※

Overseas sales ratio: 47.5%



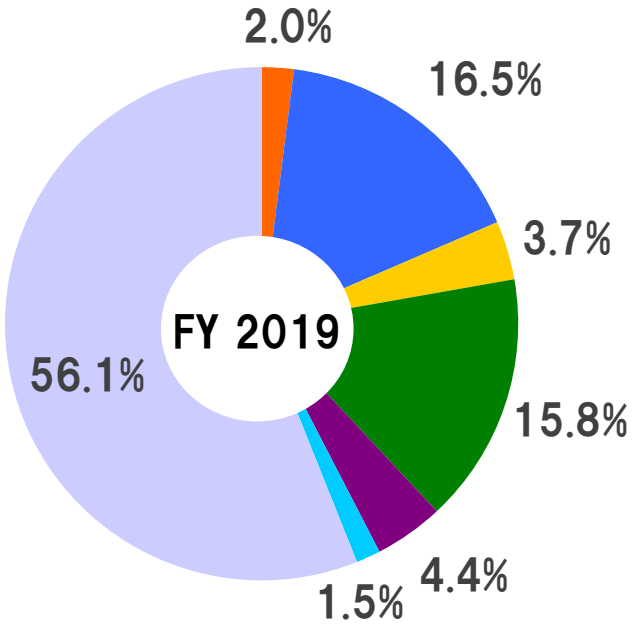
Total: 47,060 million yen

(Overseas sales: 22,352 million yen)



FY 2019

Overseas sales ratio: 43.9%



Total: 42,443 million yen

(Overseas sales: 18,652 million yen)

*Reference values for a regular year financial results period assuming a 12-month period for overseas consolidated subsidiaries

Action Items
for the Fiscal Ending March 31, 2021

Basic Views

For FY2020, we envisage a significant decrease in orders-received, but we will continue to execute strategies in growth fields

- Control fixed costs and improve the cost ratio

- Strengthen initiatives in growth fields

  5G and IoT are becoming increasingly necessary.
  Moreover, customers' investments in automation and electrification of automobiles will be recovered quickly.

- We will execute strategic investments, making use of our sound financial position

Recognition of the Current Environment

5G and IoT markets are set to recover quickly, while the automotive market is expected to prioritize investment in the fields of automated driving and electrification

Equipment Business	Environmental Test Chambers	Japan :Amid deteriorating corporate earnings, 5G, IoT, and automated driving and electrification of automobiles are priority investment fields, but investment plans are unclear. China :Investment will recover, mainly in the manufacturing industry in advanced technology fields, but there are concerns over the impact of the stalled global economy on exports. ASEAN :Business talks are continuing, but the timing of recovery is unclear. America :There are moves to return to normal, but the timing of recovery is unclear. Europe :Business talks are continuing, and the region is expected to recover gradually.
	Energy Device Equipment	China :Investment in changeover to EVs is expected to recover gradually. Europe :Investment in changeover to EVs is expected to continue.
	Semiconductor Equipment	Investment in 5G and IoT is expected to expand
Service Business	After-sales Service and Engineering, Commissioned Tests and Facility Rentals	After-sales Service and Engineering: No major decrease is expected Commissioned Tests: No major decrease expected in automotive and 5G-related business
Other Business	Environmental Preservation, Plant Production Systems	No significant changes

Action Items for FY 2020 (1)

Cultivation of 5G-related markets

- Expand the digital infrastructure field (mobile phone base stations, data centers, etc.), as well as custom products for handsets and devices, etc.
- Global marketing and sales expansion through cooperation with Group companies

Strengthen Chinese business

- Strengthen marketing with local sales subsidiaries
- Bolster competitive strength by enhancing design and production capability

Strengthen European business

- Develop new users through online sales
- Acquire orders by strengthening design functions
- Strengthen product capabilities for European markets

Action Items for FY 2020 (2)

Strengthen response to new needs in the commissioned testing business

- Expand the scope of compliance with various international standards
- Respond to needs for developmental testing of stationary batteries and air-transport testing for vehicle batteries
- Respond to international standard testing needs for medical equipment (reagents and surgical equipment)
- Launch home-based online services for commissioned testing

Promote new business

- Develop the fields of biopharmaceuticals and medical devices
- Develop the materials field
- Develop new customers through model change of low-pressure, low-temperature cookers (food machinery field)
- Start new businesses through the development of new environmental factors

For medical field
Transportation Evaluation System
(Released in March 2020)

For material field
Thermal Air Test System
(Released in December 2019)

Start Service Enabling Environmental Testing at Home

May 2020 start of “Home-based online service”
Support continuity of customers’ development operations

When using ESPEC products

Operate equipment and monitor samples from home

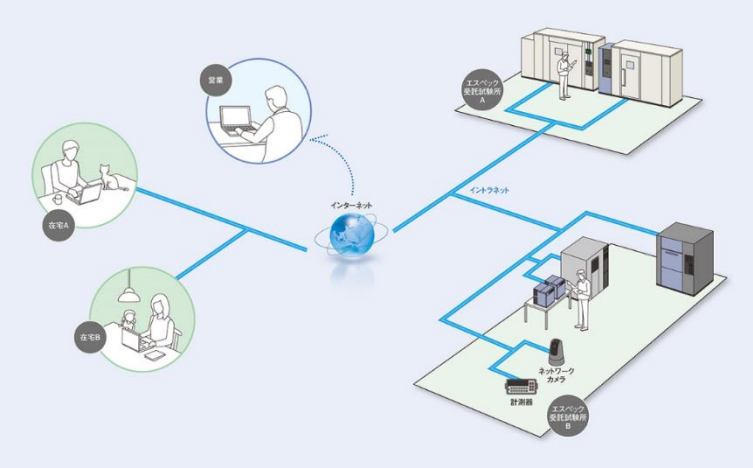
- Centralized management (monitoring and data analysis)
- Receive operating status by email
- Monitor samples using in-chamber monitoring camera (launched in March 2020)

Image of in-chamber monitoring camera

When using commissioned testing center

All testing operations performed on behalf of customer, from start to finish, including transportation

- Remote consultation
- No need to attend in person
- Remote instruction



Strengthen Technology Development Capability

New technology development building completed

Objective : Strengthen technology development capabilities and promote preservation of biodiversity by encouraging open innovation

Concepts : “Open innovation,” “Open communication,” and “Coexistence with the natural environment”

Location : Kanokodai, Kita-ku, Kobe, Hyogo (in Kobe R&D Center)

Start of operation : May 2020 (Construction started in June 2019)

Building area : 1,580㎡

Gross floor area : 4,557㎡ (Three story building)

New technological development building

Investment and Dividends

Strategic investment

- Installation of all-weather laboratory
  (large-scale multipurpose environmental testing equipment)
- Conversion to smart production of custom products
- Development of a new service menu for after-sales service operations

Main research and development

- Development of 5G-related equipment
- Enhancement of large-scale testing equipment
- Expanded product lineups for the European market

Dividends

- The dividend forecast for FY2020 has been left undetermined as it is difficult to estimate an earnings forecast

Strengthen management foundation and promote ESG

Under the corporate philosophy, THE ESPEC MIND, the Company is aiming for sustainable growth

E(Environmental)

(1) 7th Mid-term Plan on the Environment
(2) Contribute to reducing the environmental load through products
(3) Promote biodiversity and natural environment preservation activities

S(Social)

(1) Support human resource development and growth
(2) Promote working style reform

G(Governance)

(1) Maintain headquarters functions, strengthen governance
(2) Facilitate good communication with stakeholders

New Initiatives for E (Environment)

Realization of 100% green electricity for commissioned testing services at Kariya Test Center

In January 2020, we became the first commissioned testing facility to convert to green electricity using a green electricity certificate.*

We expect to reduce annual CO_2 emissions by approximately 768 t.

*A certificate issuer receives certification from a third-party certifying organization (JAPAN QUALITY ASSURANCE ORGANIZATION) for environmental added value of electricity generated from renewable energy. The certificate can be traded as a system.

Kariya Test Center

Promotion of biodiversity and natural environment preservation activities

Strengthen biodiversity preservation activities using the green rooftop of the technology development building in the Kobe R&D Center, which uses exclusively native species of plants, and the existing ESPEC forest and biotopes

- Promote the biodiversity business (alliances with venture companies, etc.)
- Provide spaces for learning about biodiversity

Green roof of New technology development building , Biotope, ESPEC Forest

New Initiatives for S (Society)

Started an in-office telework system where employees can work together with their children

As a measure to respond to emergency closure of elementary schools due to COVID-19, opened the Head Office conference room to relieve pressure on staff

Period for measures : March 10-31

Eligible staff : All staff with children at elementary school age and below

Osaka Prefectural Award for Companies Promoting Positive Cooperation between Genders

Received the “Positive Gender Cooperation Excellence Award”

In January 2019, we received the “Positive Gender Cooperation Plus” certification from Osaka Prefecture, and in August we received the “Positive Gender Cooperation Excellence Award” in the Second Osaka Prefectural Award for Companies Promoting Positive Cooperation between Genders.

Finally

- The Company's businesses support advanced technology development and contribute to the solution of social issues.
  We believe that demand will certainly return during the economic recovery period, and expand over the medium term.

- The Company will work to enhance its adaptability and take steps to ensure that it can grow steadily.

Quality is more than a word

These materials contain forward-looking statements, including the Company's present plans and forecasts of performance, that reflect the Company's plans and forecasts based on the information presently available. These forward-looking statements are not guarantees of future performance, and plans, forecasts, and performance are subject to change depending on future conditions and various other factors.

INQUIRIES:
ESPEC CORP.
3-5-6, Tenjinbashi, Kita-ku, Osaka 530-8550, Japan
E-mail: ir-div@espec.jp
Jyunko Nishitani (General Manager),
Yasutoshi Nakagawa and Natsuko Okawa
Corporate Communication Department

Reference

History of Environmental Test

What is Environmental Test

Test to analyze and evaluate effects of environmental factors such as temperature, humidity, pressure, and light on various industrial products like electronic components in order to ensure product quality.

<1950s>
The environmental test was JIS-standardized in Japan for consumer products.

<1970s-1990s>
"Reliability" and "quality control" became important issues in product development. Demand increased dramatically due to a rapid shift toward computerization and the use of electronic components.

<Today>
Demand is expanding in 5G and IoT field, also the development field of automobiles' electrification and automated driving functions.

1961 Japan's First Environmental Test Chamber

【 Low temperature & humidity chamber "Lucifer" 】

Over 60% domestic

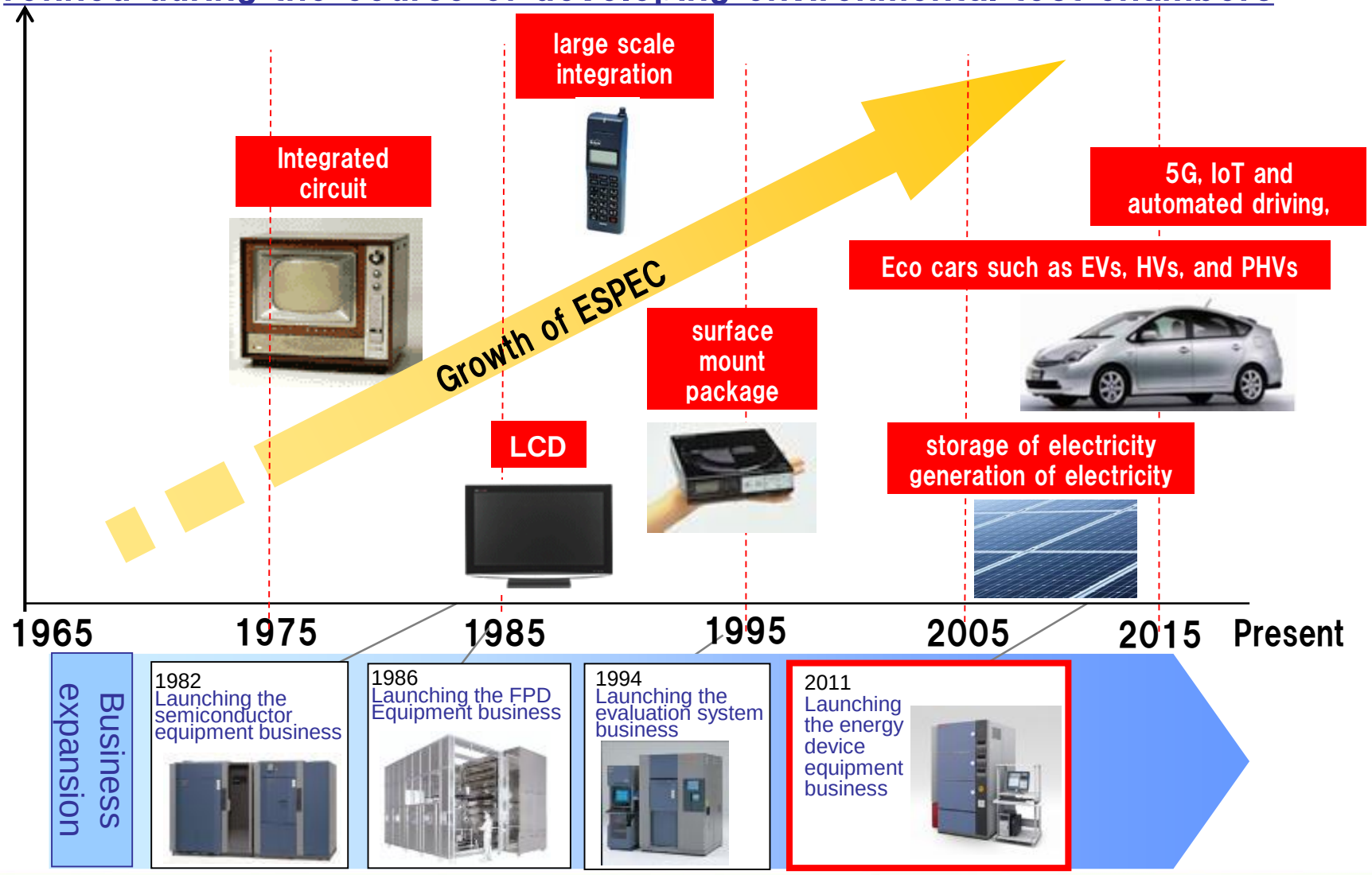
Over 30% worldwide

To Worldwide Market Share No.1

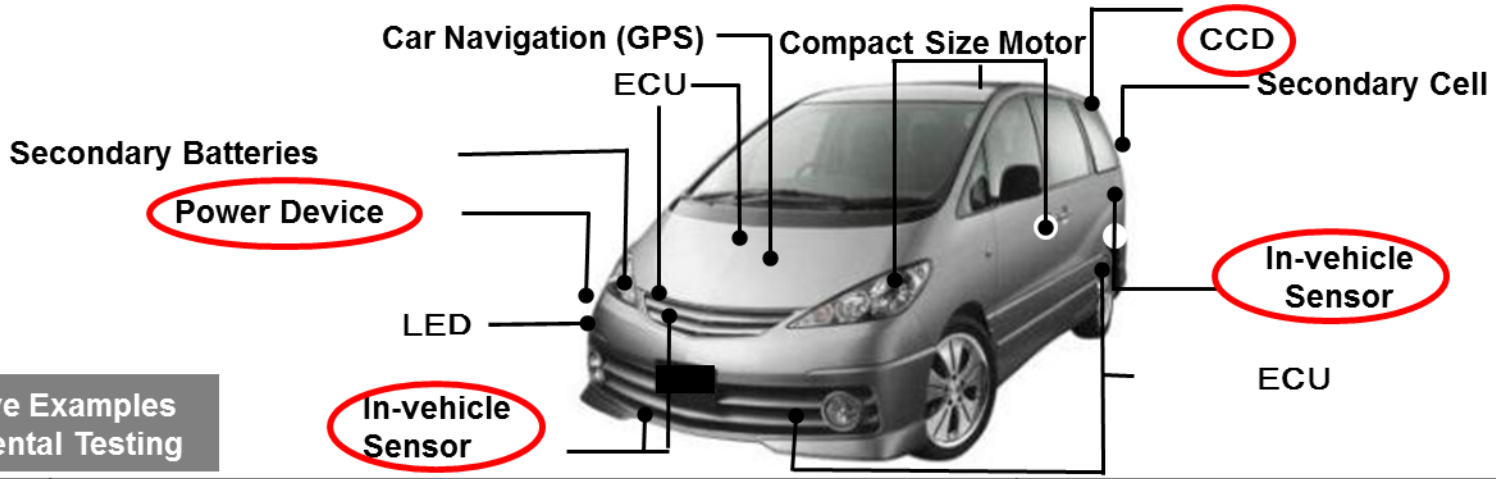
【 Temperature & Humidity Chamber】 "Platinous J series"

Transition in Business

Expanding business based on the “environmental creation technology” refined during the course of developing environmental test chambers



[Equipment Business] Usage Case with Environmental Test Chambers



Representative Examples for Environmental Testing

Device	Process/Test Condition		Our Products
【Power Device】 	Inspection	■Thermal shock test: −40℃⇔+125℃	Thermal shock chamber
		■High temperature exposure: +175℃、+85℃	(Compact size) Oven
		■Burn-in test	Burn-in chamber
【In-vehicle Sensor】 	Inspection	■Temperature cycle test of printed circuit board: −40℃⇔+110℃	Temperature & humidity chamber (Platinous) /Oven
		■ Temperature characteristic test after soldering: Linear change between -30℃ and +85℃	Burn-in chamber, Rapid-rate thermal cycle chamber
	Evaluation	■ Thermal shock test : −30℃⇔RT⇔+80℃、−55℃⇔+155℃	Thermal shock chamber
【CCD／CMOS】 	Production	■ Diffusion Test: +150℃	Compact size Oven
		■ Drying after cleaning: +85℃	Clean Oven
	Evaluation	■Screening: +85℃	Temperature chamber (Platinous)／Burn-in chamber
	Inspection	■Temperature and humidity test: +85℃／+85%rh、+60℃／90%rh	Temperature & humidity chamber (Platinous)
		■Acceleration test: +120℃／100%rh	HAST chamber
		■ Thermal shock test : −40℃⇔+125℃、−20℃⇔+85℃	Thermal shock chamber

[Equipment Business] Main New Products

Release Date	Name of product	Features
Mar. 2020	Transportation Evaluation System	•Recreates transport environments for pharmaceuticals and medical devices Applications in biopharmaceutical R&D and medical equipment quality control
Feb. 2020	Walk-In Type Temperature (&Humidity) Chamber for Drive-In Series	•Recreates various weather environments in a large space accommodating two vehicles
Feb. 2020	Walk-In Type Temperature (&Humidity) Chamber for High-Power Series	•Complies with international IEC standards and German automobile industrial standard
Dec. 2019	Thermal Air Test System	•Materials testing is possible under actual use conditions such as in vehicles through combinations of various types of material testing equipment
Dec. 2018	Aging Cabinet	•There is no temperature rise due to defrosting, and long-term continuous operation of high humidity environment is possible while maintaining below 5℃ •Equipped with sterilization mode
Nov. 2018	Standard type secondary battery charge-discharge tester for automobiles	•Supports charge-discharge testing for large capacity secondary batteries in automobiles
Oct. 2018	GOOD DESIGN AWARD 2018 Environmental Stress Chamber AR series Rapid-Rate Temperature Cycle Type (5K/min)	•Conforms to IEC standards and a German automobile industry standard •Uses European F-gas Regulation-compliant low-GWP refrigerant R-449A
Mar. 2018	Environmental Stress Chamber AR Series Rapid-Rate Temperature Cycle Type	•Second F-gas Regulation-compliant low-GWP refrigerant (R449) environmental testing chamber
Feb. 2018	Environmental Stress Chamber AR Series Standard Type	•Added four models with new 220 L and 390 L chambers (with and without humidity control), bringing the total lineup to 12 models

[Equipment Business] New Product Introduction (1)

(Released in Feb. 2020)

■Walk-In Type Temperature (&Humidity) Chamber for High-Power Series

<Features>

- Complies with international IEC standards and German automobile industrial standard LV124
  (Can perform rapid temperature change testing of samples at 3°C/minute)
- Low GWP coolant (R-449A) as standard equipment

Walk-In Type Temperature (&Humidity) Chamber for High-Power Series

(Released in Dec. 2019)

■ Walk-In Type Temperature (&Humidity) Chamber for Drive-In Series

<Features>

- Closely recreates various weather environments in a large space of approximately 500 ㎥ accommodating two vehicles to perform actual vehicle testing
- Multiple environmental factors can be recreated simultaneously, including humidity, sunlight, rain, snow, fog, and wind

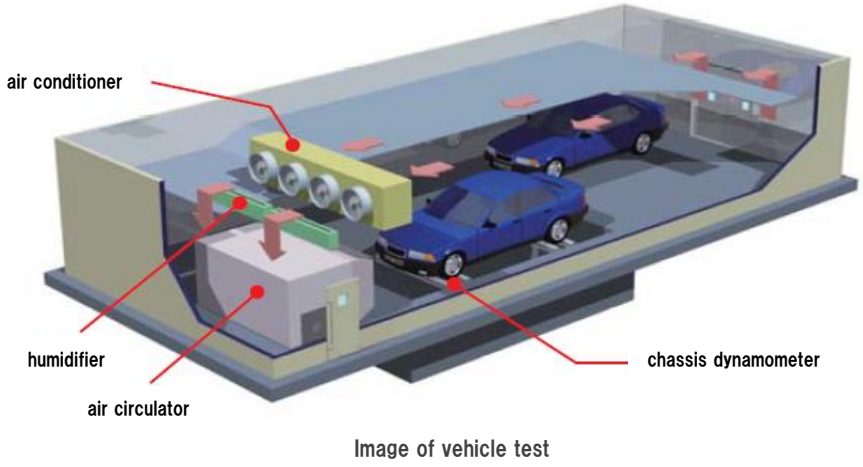


Image of vehicle test

Walk-In Type Temperature (&Humidity) Chamber for Drive-In Series

[Equipment Business] New Product Introduction (2)

For the medical field (Released in Feb. 2020)

■ Transportation Evaluation System

<Features>
- Enables simultaneous recreation of temperature and vibration environment during transport to test medicine, etc. in actual transportation environment
- Two types of equipment for biopharmaceutical and reagent R&D application and medical equipment quality control application

2 models of Transportation Evaluation System

For material field (Released in Dec. 2019)

■ Thermal Air Test System

<Features>
- Can be combined with various materials testing instruments to perform materials testing in actual usage environment with given temperature
- Uses ESPEC's proprietary new method for cooling and heating test pieces efficiently

Example of set up with friction and wear testing machines and hardness meter (Left)
Thermal Air Test System (Right)

[Equipment Business] Examples of Products Delivered

(Delivered in July 2018)

■Delivery examples of temperature (& humidity) chambers, test chambers for use for building materials

Uses

Reproduce the environment inside apartments (temperature and humidity) and outdoors (weather such as rain, snow, and solar radiation), conduct performance evaluations and durability tests of building materials for sash, balcony, etc.

Temperature (& humidity) chambers, test chambers for use for building materials

Temperature (& humidity) chambers are movable so that building materials for testing can be easily changed

Furnished with irradiation equipment and watering (rain) equipment, to reproduce an outdoor weather environment

[Equipment Business] Examples of Products Delivered

(Delivered in March 2016)

■Smart System Research Facility, Fukushima Renewable Energy Institute, AIST (Koriyama city, Fukushima)

Product delivered:
Large walk-in type temperature & humidity chamber

Uses:
Performance and safety evaluation for large power conditioners for solar power generation
Supports heat generation loads of 100 kw and large weights (21 tons)

Large walk-in type temperature & humidity chamber

■National Laboratory for advanced energy storage technologies (NLAB), National Institute of Technology and Evaluation (Nanko, Osaka City)

Product delivered:
1.Walk-in type temperature & humidity chamber for charge-discharge testing
2.External short-circuit testing equipment (energy devices equipment)

Uses:
1.Evaluate the performance of storage batteries by repeatedly charging and discharging them
2.Evaluate safety by confirming that storage batteries will not catch fire or rupture if they short circuit

Walk-in type temperature & humidity chamber for charge-discharge testing

[Equipment Business] Usage Case with Energy Device Equipment

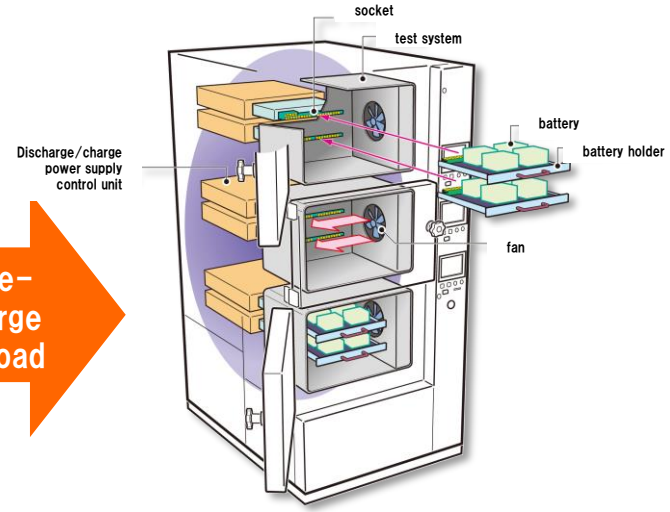
Charge-discharge Cycle Evaluation Equipment

Equipment for ensuring the reliability and safety of lithium-ion secondary batteries for next-generation vehicles (e.g., hybrid and electric vehicles)

Charge-discharge Cycle Evaluation Equipment

Secondary Batteries

Charge-discharge cycle load



Checking the charge-discharge characteristics of secondary batteries

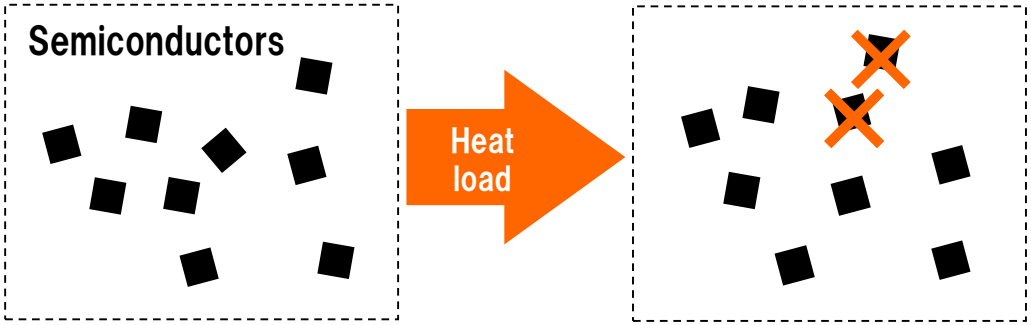
Evaluating the performance and life of secondary batteries

[Equipment Business] Usage Case with Semiconductor Equipment

Screening

Eliminate defective products to maintain initial-period quality at the final inspection stage of semiconductor device manufacturing

Burn-in chamber

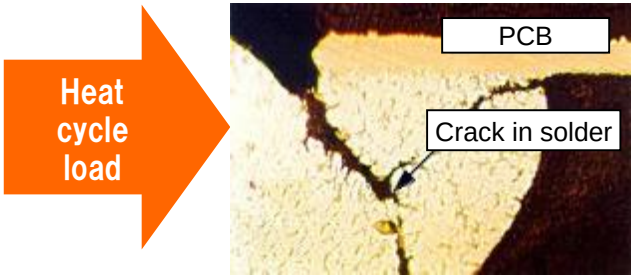


Elimination of latent early failures

Reliability Evaluation

Used to evaluate basic failure patterns to ensure reliability in the development of new technologies

Conductor resistance evaluation system



Electrical evaluation of reliability of joints in electronic parts

[Service Business]

After-sales Service and Engineering

Preventive maintenance of products, maintenance service, and the upgrading/improvement and installation/relocation of products

■ Speedy response via one of the most extensive networks in Japan

■ Launching new services by utilizing the network function mounted in the equipment

Commissioned Tests and Facility Rentals

Commissioning of testing, analysis, and evaluation; consulting; equipment rental; sales of used products; calibration of test equipment, etc.

■ The company has four commissioned test centers in Japan, one in Thailand, two in China.
(Japan: Utsunomiya, Toyota, Kariya and Kobe, Thailand, China: Shanghai, Suzhou)

・The centers are also recognized as official calibration facilities under the Japan Calibration Service System (JCSS).

■ [First in world] Opened Battery Safety Certification Center. (in September 2015)

・ Providing a one-stop service for testing and certification application services compliant with United Nations regulations on the safety of automotive rechargeable batteries.

・ Entered into business alliance with TÜV SÜD Japan Ltd., a third-party certification agency (in October 2014)

Battery Safety Certification Center

■ [First in Japan] Acquire ISO/IEC 17025 test facility certification simultaneously in the three fields of automobiles, trains and airplanes

■ The Toyota Test Center provides one-stop services for testing LV 124, the German Automotive Manufacturer Testing Standards

* ISO/IEC 17025: An international standard in which an authoritative third-party organization certifies whether a test facility or calibration organization is capable of producing accurate measurements or calibration results

[Service Business]

World's first Battery Safety Certification Center compliant with United Nations regulations

Providing a one-stop service to support the implementation of 9 safety tests and applications for certification by certification agencies, as stipulated by UN ECE R100-2. Part II, a United Nations regulation.
(The facility was opened within the Utsunomiya Technocomplex in September 2015.)

Crush Testing Equipment
(No. 1 Safety Test Room)

No. 2 Safety
Test Room

Renovated the Toyota Test Center First testing facility in Japan to address the German Automotive Manufacturer Testing Standards

Supporting Japanese automotive equipment manufacturers seeking to develop global operations by addressing all test items set forth by the LV124 German Automotive Manufacturer Testing Standards
(Renovated the Toyota Test Center in September 2019)

Toyota Test Center

[Other Business]

Environmental Preservation

■Reforestation (Tree planting)

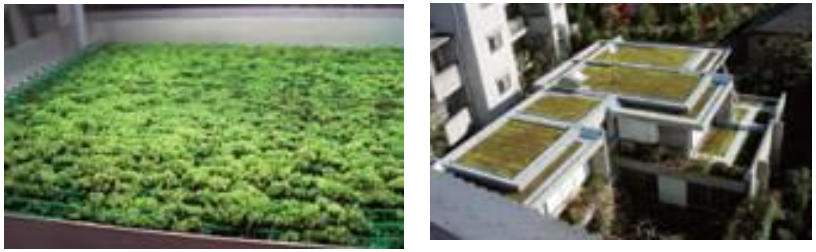
Recovery of local forest by selecting species and planting out seedlings using potential natural vegetation data.

■Waterfront biotope restoration

Reconstruction of natural environment, development of vegetative revetments, and water quality improvement using aquatic plants.

■Urban greening

Provision of roof and wall greening systems that use moss to effectively alleviate heat island effect.



Plant Production Systems

Provision of various cultivation environments employing advanced environmental control technologies to control light, temperature, humidity, carbon dioxide, etc.

Plant factory

Phyto-toron

[Other Business]

Produced a high value-added vegetables using deep-seawater

At a plant factory* near Haneda Airport,
production and sales of vegetables high in minerals
with the use of deep sea water.

* Joint research with DHC Corporation and Kyoto University

Interior of the plant factory and Factory-produced vegetables "mineraleaf"

[Other Business] Examples of Products Delivered

■Arid Land Research Center, Tottori University

(Delivered in March 2016)

Products delivered:
Experimental System for Analyzing Responses of Dryland plants to Climate Changes (2 units)
(Simulates the climates of arid lands, including high temperature, low humidity, strong sunlight, and high winds)

Uses:
Plant cultivation experiments and experiments to develop efficient water-usage technologies in arid lands, research to solve issues facing arid lands

Experimental System for Analyzing Responses of Dryland plants to Climate Changes

Experiment in progress

ESPEC Identity Corporate Philosophy

Our important values that have been passed on since our inception

“THE ESPEC MIND” (Excerpt)

The Origin To engage in a higher level of value exchange as a public institution

Mission Provide more certain Seikankyo (living environment) via environmental creation technology

Style Progressive, Reliable, Open, Fair

Declaration What ESPEC promises society

“compliance,” "culture," "human rights," "the environment," “education/enlightenment.”

ESPEC Business and SDGs

Equipment Business / Service Business

Contribute to the development of cutting-edge technologies through the supply of products and services that harness "Environmental Creation Technology"

- Supply products and services that contribute to the development of cutting-edge technology, with a view to solving social and environmental issues

Environmental Preservation

Contribute to biodiversity preservation

- Promote the nature restoration/revival business, which contributes to biodiversity preservation and global warming mitigation

Plant Production Systems

Contribute to the stable supply of food to address global warming and extreme weather

- Supply plant factories that can systematically grow safe vegetables
- Supply plant production systems to promote research into drought-tolerant plants

ESPEC Business and SDGs

Environmental（E）

- Contribute to global warming mitigation
- Reduce environmental impact
- Eco-site and eco-operation
- Prevent pollution
- Preserve biodiversity

Social（S）

- Improve customer satisfaction and ensure product safety
- Supply chain management
- Respect human rights and promote the success of diverse human resources in the workplace
- Provide appropriate disclosure and communication of information
- Give back to society

Governance（G）

- Enhance governance
- Promote risk management
- Ensure compliance

Initiatives tackling environmental problems

Environmental management in line with the Mid-term Plan on the Environment

Aim to contribute to the realization of a sustainable society through business activities
Currently we are implementing the 7th Mid-term Plan on the Environment
(planned implementation period: FY2018-FY2021)

Forest preservation activity - Kehara Forest Creation Program

In March 2018, designated as an affiliated business of the Japan Committee for United Nations Decade on Biodiversity
Since 2007, the Company's employee volunteers have increased to over 1,000 participants

ESPEC Foundation for Global Environment Research and Technology (Charitable Trust)

Provides funding support every year for research, technology development on global environmental conservation.
Established in 1997 on the 50th anniversary of ESPEC

ESPEC Midori-no-gakko schools

Human resources certification, etc. based on Act on the Promotion of Environmental Conservation Activities through Environmental Education
Seminars and events are held throughout Japan to train leaders who will think about the global environment

Initiatives tackling environmental problems

(March 2018)

Designated as affiliated businesses of the Kebara Forest Creation Program: Creating a Mountain Full of Treasures—The Kyoto Model Forest Project, and The Japan Committee for the United Nations Decade on Biodiversity

- The Kebara Forest Creation Program is a project in which ESPEC and ESPEC MIC CORP. are working with the Fukuchiyama City Oecho Kebara Residents Association regarding forest conservation activities

- ESPEC formulated Creating a Mountain Full of Treasures Project which freshly reveals the attractive treasures in the forest: The variety of living creatures which live in the Kebara Forest. ESPEC conducts conservation activities such as cutting down and thinning, produces maps showing where the living creatures are, and maintains walking courses

Participants in the Kebara Forest Creation Program

This project is designated as a project recommended by the Japan Committee for the United Nations Decade on Biodiversity (UNDB-J)

To a company where employees can be more active

Initiatives to promote women's success

From the Ministry of Health, Labor and Welfare:
The Company received the "Kurumin" certification, which is granted to companies that support child-rearing. And the highest ranking of the certification mark "Eruboshi" based on the Act on Promotion of Women's Participation and Advancement in the Workplace.

The female leadership development program

Employee Education System Enhancement

- Implement a Global Trainee Program aimed at developing human resources who are capable of working in international settings
- Enhance the education program to support management executive education and self-development
- Promote work style reforms

On-site training in the Global Trainee Program (U.S.)